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Physicians Emigration: from International Recruitment Policies to Health and Economic Outcomes

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Abstract:

This article shed light on the global impacts of physicians' emigration on health and economy of both donor and recipient countries. Emigration fills the vacuum in labor shortages in destination countries by the active recruitment, however it may also provoke serious structural problems. Physicians' emigration negatively influences health and economic system in source countries, while subsidizing the rich countries as they continue to deplete poor and developing countries from their health assets of human resources. There is an urgent need for policy makers in both regions to minimize the negative consequences resulted from this phenomenon and maximize advantages to achieve more equal and sustainable world. Resilient healthcare systems can be created for everyone by addressing the underlying issues and promoting international collaboration.

Keywords: *Economic Impacts; Health Impacts; Physicians' emigration; Recipient Countries; Source Countries.*

Introduction:

Emigration has been and continues to be a major catalyst for socio-economic changes. Various interconnected factors seem to contributed significantly in shaping the landscape of individuals' mobility, factors such as technological advancement, ease of mobility, globalization, transnational political and economic openness, and new citizenship.

However, since the Covid-19 pandemic was announced in the spring of 2020, numerous countries have closed their borders, which has had an impact on international migration policies. During this period, there were approximately 110,000 movement restrictions put in place. Meanwhile, health workers have received approximately 1,000 exemptions at the same period (1). This is not an arbitrary exception, but

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rather driven by the urgent need for this important health human resource.

In fact, most, if not all, workers migrate to other parts of the world for the same reasons. Nevertheless, physicians and other highly skilled health care professionals, are given mush more emphasize by host countries which means that their skills substantially differ from those of other types of skilled workers.

Indeed, physicians' emigration is governed by binary interconnected push and pull factors. Push factors are those problems and conditions rooted within the source country, such as poor financial remuneration, poor career opportunities, corruption and violence. These factors prevail in a more dramatic way in developing countries, and contribute substantially to the decision of emigration abroad. Pull factors, on the other hand, are the conditions in destination countries that incentive physicians to immigrate there such as attracting salaries, economic opportunities, better working conditions and job satisfaction.

However, the impact of physicians' emigration remains controversial among scholars between those who assert the negative impacts and those who hold the optimistic perspective. The former known as nationalists that seek to protect their human health resources and their country from health and economic losses, whereas the last view emigration as an opportunity for sources country to strengthen their economy and shifting medical brain drain to brain gain. Under this polarized debate, the current study addressed the following question:

What are the main impacts of physicians' emigration on donor and recipient countries?

The aim of this study was to investigate more clearly the major repercussions of physicians' emigration in order to have a clearer understanding and precise picture of the de facto situation of this phenomenon. The analysis focused on two levels: health consequences on donor countries and the economic status in both source and destination countries.

It is paramount to understand the different ramification of physicians' emigration as they are considered to be an integral part of any health sector and ensure social health security. On the other hand, to produce highly qualified physicians hinges on a substantial budget, which means that any losses due to the exodus of these workers may jeopardize the economy.

Chapter I: A brief overview of international recruitment and physicians' emigration:

International recruitment of physicians has undergone several phases linked to emigration that shaped the current landscape of health and medical brain drain:

1- The First phase:

Health professionals have moved from the early colonial era, frequently to assist colonial governments, and far before the majority of other skilled worker groups migrated. When health workers began to migrate internationally fifty years ago, in the 1960s, the majority of migrants were physicians, who were primarily men(2). This time frame marked the beginning of the medical migration, which was frequently linked to missionary work as a component of the colonial project (3).

2- The second phase:

In pursuit of better prospects and education, physicians from former colonies relocated to former colonial countries. This trend, which is referred to as the second phase of migration, has developed since the 1960s(4). Over time, the flow of physicians to colonial emerging countries ceased to continue. During this time, governments in Western industrialized nations came to realize that the number of physicians produced domestically was insufficient to meet internal demand. The establishment and growth of health insurance programs has increased the demand for medical services in the English-speaking Commonwealth nations. As a result, these nations encountered a serious issue with access to physicians in the 1960s and 1970s, which the media at the time referred to as a "shortage" of local physicians(5).

The earliest research on this phenomenon emerged in the 1960s and focused mostly on mobility between industrialized nations. Up to a third of British medical graduates emigrated to the USA and Australia. These emigrants were mostly replaced by doctors from larger Commonwealth nations. This new migration phase marked the beginning of the phenomenon that came to be labeled as "brain drain"(6).

In 1972, the number of physicians practicing in countries other than their home countries or countries where they receive their training was at least 140,00. At that time, they made up around 6% of all physicians worldwide. Only three countries account for more than three-quarters of these doctors: the USA (about 68,000 in 1972), the UK (21,000 in 1970), and Canada (9,000 in 1971). Other significant destination

regions are Australia (4,000 in 1972) and the Federal Republic of Germany (6,000 in 1971) [(7)].

Between 1963 and 1979, the US alone admitted almost 60,000 medical graduates from other countries. Between 1961 and 1975, 12,000 international medical graduates were admitted to Canada. 12,640 foreign-trained doctors were licensed in Great Britain (not including Irish doctors) [(8)]. Nearly half of more than 100 doctors who immigrate to Canada each year are from the West Indies. The annual flow into Canada is negligible in comparison to the annual influx into the US, which exceeded 900 in 1973. Similarly, only about 40 new registrations were made each year into the UK[(9)].

Globalization has accelerated the free movement of health professionals. As a result, in 2000, there were roughly 21% of foreign physicians in Australia, 30% in the UK, 34% in New Zealand, 23% in Canada, and 24% in the US [(10)]. In the OECD countries in 2000, there were 421,746 physicians, or 18.2% of all physicians worldwide [(11)]. A large proportion of physicians in France were trained elsewhere as well. This is mostly due to the ongoing need for medical professionals in regions with limited access to care or in certain specializations[(12)].

The majority of physicians who work abroad are sent by Asian countries. The fact is that these countries offer medical training possibilities commensurate with the size of their populations, given the rapid growth of the population. India is considered to be the first in terms of medical professionals working overseas in 2004 with 71,290 physicians, followed by the Philippines with roughly 20,000 physicians. In contrast to the 1950s, when the majority of physicians worldwide were from Europe, half of them now originate from Asia. Remarkably, Canada and the UK rank third and fourth, respectively, with 18,635 and 17,759 physicians employed outside of these two countries. This may be explained by the fact that both countries speak English, which surely makes traveling abroad easier for them. Only 4,311 French physicians who are qualified to practice abroad make up France's twenty-fifth place ranking [(13)]. However, a distinction is typically made between permanent migration, which primarily occurs between industrialized North countries and poor South regions, and short-term, transient flows, which happen when nations like China and Cuba send health personnel overseas to earn foreign exchange.[(14)].

3- <u>The third phase:</u>

Connell [15] alludes to the third wave of physician emigration that occurred during the Gulf's oil boom, a time of expanding growth, the building of new hospitals and other medical facilities, and a rise in the foreign workers emigration. Prior to the Gulf population being a minority in nations like Kuwait and the United Arab Emirates, these migrations were primarily made outside the health industry. Nonetheless, there was a decrease in the rates of skilled labor migration following the end of the Vietnam war and the global financial crisis that began in the late 1970s and was particularly severe in Latin America. There were also some return flows outside of the Gulf region in the 1980s. Foreign migration was ceased during this time, and there were growing worries about overproduction abroad and physician unemployment in numerous countries, including Pakistan and Egypt[16].

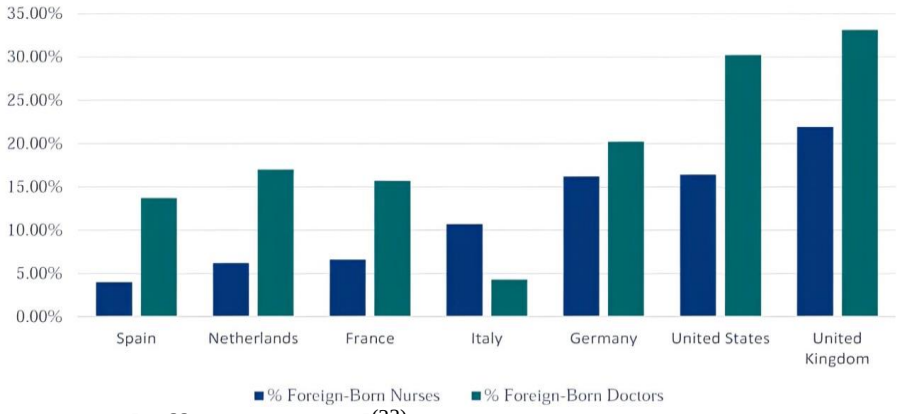
4- <u>The forth phase:</u>

A new phase of emigration had started by the 1990s, as a result of the world economy growing more quickly once again, rising oil prices, the EU recognizing qualifications obtained outside of the EU, businesses becoming more globally integrated, higher education becoming more globally recognized, and the internationalization of professions, including the health sector [17]. As a result, the movement of physicians has progressively grown more intricate and worldwide. Conversely, the loss of national boundaries brought about by globalization has resulted in a rise in the movement of health professionals across countries. This resulted in a large-scale exodus of people from former communist nations to the core nations of the EU, including physicians[18].

With the emergence of the Covid-19 epidemic, policies that attract physicians have emerged. Researchers suggested that a significant proportion of physicians have made plans to move from their homes during this period[19]. The increased demand in industrialized nations and the atmosphere brought about by the liberalization of commerce in health services appear to have substantially pushed the mobility of health personnel between countries in recent years. Thus, there have been appeals for a critical analysis of the macroeconomic environment and how it affects the health sector in developing nations, as these nations' highly indebted economies and meager health budgets are unable to support physicians under the conditions they confront [20].

Accordingly, the US, the UK, Canada, and Australia are the countries that have benefited most from physicians immigration over the past half century [(21)]. According to a recent study, the number of physicians with foreign training arose by more than 46% in the study countries (Austria, Belgium, France, Germany, Ireland, Norway, Switzerland, and the UK) between 2010 and 2018. This growth rate was higher more than three times of the overall population's growth rate of 13%. In Germany, the number of doctors with foreign training has doubled, whereas in the UK, it has only increased by 10%[(22)]. This is evident as shown in the figure below.

Figure (1): Share of Forein-Born Nurses and Doctors in Select OECD Countries (2015-2016)



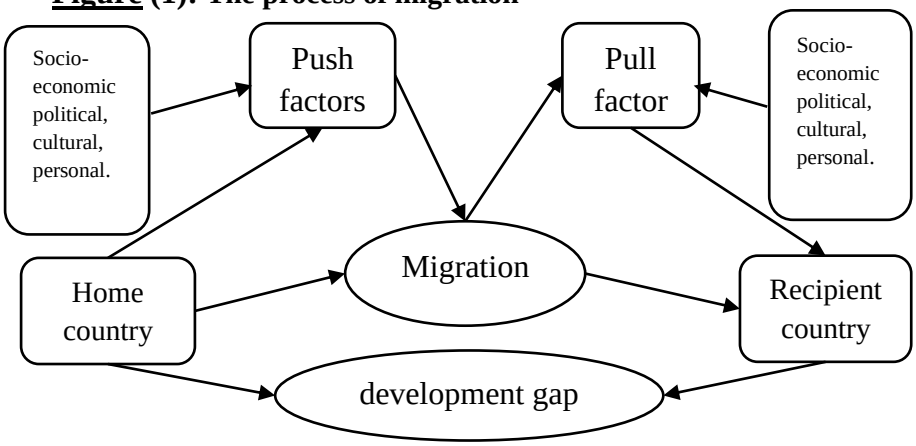
Source: Shaffer, F. A., et al[(23)]

This aligns with the findings of Padarath et al.'s [(24)] analysis, where he suggested that migrants flows follow the logic of "wealth hierarchy", where people move to countries that offer more adequate living conditions, causing inequality between donor and destination countries. However, Shanthi's [(25)] research indicated that the lines separating permanent from temporary mobility are becoming more brittle and contingent, and that modern processes of international migration are frequently heterogeneous, cyclical, and diversified in terms of stages and time periods. At the moment, migration patterns include migration from developed to more developed countries as well as migration from impoverished regions to wealthy countries. For instance, healthcare professionals from newly admitted member states now have more

options to emigrate to developed EU countries in search of better employment possibilities as a result of the EU's expansion(26).

Nevertheless, the impoverished nations are the ones most impacted by this process. According Ahmed (27) "the migration of health workers from poor countries to richer countries is unlikely to stop, but we can and must develop policies to reduce the damage it causes.". However, this should start with addressing the push and pull factors to understand the process of migration as shown in the figure below:

Figure (1): The process of migration



Source: The author based on Push and Pull Theoretical Model.

According to the above framework, migration decisions are determined by "push" and "pull" factors in source and destination regions. In general, unsuitable living conditions (for example, low wages or high unemployment rates) drive people to emigrate from their home country, while the destination country is determined mainly by its high socio-economic development. However, the decision to emigrate does not hinges on the favorable economic conditions, but also influenced by "intersecting barriers" (such as distance, physical barriers, immigration laws, etc.), as well as personal factors(28). Addressing this factor is the starting point of the solution.

Chapter II: The Impact of Physicians' emigration on Health Status of the Source countries:

The impact of physicians' emigration is manifold and has many aspects, however the focus of this chapter is on losses and benefits in source countries.

1- Losses in Source Countries:

Health workers are fundamental to every health system and play a crucial role in improving health[29]. Thus, the lack of health workers limits the number of people who receive necessary medical care and lowers the quality of care for those who are fortunate enough to receive it. The health system's ability to deliver both quantity and quality of health services falls [30].

The scarcity of physicians brought on by emigration immediately resulted in staffing shortages in certain healthcare facilities, that forced them to close and prevent some individuals access to health care [31]. Due to the acute scarcity and the challenges of finding alternative of health workers emigrants from rural areas, the situation is particularly severe in these places. For instance, in Mali, the government established 533 community health centers; but, in January 2001, only 43% of these facilities were open, while the remaining facilities closed due to lack of staff. Malawi and Zambia are no exception. There is scarcity of health workers in many of the current clinics and hospitals, making it difficult and time-consuming for patients to obtain adequate health care [32]. In Zambia, for example, of more than 600 doctors trained in the country since independence, only 50 remained [33].

The departure of physicians frequently leads to a severe physicians' shortage in rural places, forcing medical facilities to hire staff members who are solely qualified to handle simple medical issues. It is less probable that patients with more complicated diseases will receive the right health care [34]. For instance, in Malawi, inexperienced workers have been sent to work as midwives [35]. Communities in West Africa are in desperate need of medical care, but they also need the stability and leadership that doctors bring to advance the health system [36]. The Volta Regional Hospital, a new hospital in Ghana, was forced to rely mostly on retired doctors and surgeons, who might not have the most recent medical knowledge [37]. It is known that treatment today depends on knowledge-based interventions.

Overwork is more common among doctors, which increases weariness and may lead to mistakes. Furthermore, due to the lack of physicians, health professionals who treat a large number of patients will have less time to spend with each patient, which limits their ability to thoroughly diagnosis the patient. This could result in an incorrect

diagnosis and inappropriate treatment because patients would have to wait a long period to begin treatment [(38)].

The shortage of physicians as a result of emigration, constitutes a major obstacle to implement health interventions which aim at improving maternal and child health. Non-emigrant physicians experience additional pressure and workloads, thus increasing pressure on the system as a whole [(39)]. Besides, they suffer from reduced motivation to work, especially with low salaries and poor equipment, as a result, physicians turn to the private sector. Communities, then, will be forced to seek services from the private sector that are more expensive, thus depriving low-income people of access to services [(40)].

In countries where serious and infectious diseases such as AIDS persist, the risk of infection is a driver of emigration, which in turn leads to a severe shortage of physicians and thus people will have poor access to primary health care, especially in remote areas. Accordingly, HIV can exacerbate the difficulty of accessing health services in these areas[(41)].

Physicians' emigration leads to increased workload, low morale, burnout, and decreased quality of life for non-migrant health professionals. This leads to more migration and thus more shortages. Hence, the lack of trainers may limit countries' ability to train more highly qualified health care workers [(42)].

A large portion of remaining health workers lack motivation, not only because of their workloads and meager salaries, but also because of poor equipment and limited career opportunities. These conditions in turn lead to a continuing spiral of migration, further paralyzing the system and putting greater pressure on the remaining workers who also begin to realize their ambitions away from the poor working conditions in their countries[(43)].

Physicians' emigration also affects the size of the health workforce in source and destination countries, and their distribution across the regions. These changes affect health systems – the larger the scale of these movements, the more likely they will be to have tangible impacts on health systems[(44)].

The inability of the source countries to adequately provide health care for its population is one of the most significant consequences. The impact is especially significant in cases where there is a serious deficiency of physicians, making replacements impossible. Their

remaining colleagues are further burdened by the inability to replace the vacancy they left behind [45]. According to Martino et al [46], in countries with shortage of doctors, the death of a single physician frequently has a substantial effect on health services. Martineau and his colleagues analyzed the effects of health professional emigration and concluded that "medical services in rural areas tend to be the final losers, as they come lowest in the hierarchy of people's preferred working place" [47]. As to the authors, the most adversely affected by physician emigration are the poorest citizens who reside in remote places.

Health care workforce emigration can have negative impacts such as rural depopulation and workforce attrition[48]. The high rate of migration of this human resource escalates the rate of hospitalization among those receiving care, increases the number of days hospitalized, and elevate the mortality rate, which ultimately leads to the deterioration in the quality of patient care[49]. In addition to impoverishing the country from its qualified physicians and exhausting the resources invested in training them, leads us to the justice dilemma [50]. This is asserted by a recent study that included 188 countries during the period 2000-2015, as the medical brain drain negatively affects children's health. Effects on child health are strongest in low-income countries [51].

The World Health Organization (WHO) (2009) noted that the lack of access to basic health services, prevention, information, drug distribution, emergency and clinical care, and life-saving interventions like child immunization, safe pregnancy, maternity services for mothers, and access to treatment for AIDS, tuberculosis, and malaria is a result of the physician shortage which is in fact an outcome of emigration. This phenomena reduces the effectiveness of health care delivery, and reduces the confidence of the remaining workforce [52].

Research conducted in[53] as part of the Shared Learning Initiative has demonstrated that nations who cannot afford health personnel are negatively influenced by global inequities in their distribution. For instance, the same report states that just around 30% of the world's health professionals are available in Asia, home to almost half of the world's population. Africa has the greatest rate of sickness and a serious scarcity of health staff.

Table (1): Africa's unequal burden and shares

	Share of population	Share of health workers	Burden of disease
The world	86.24%	98.70%	75%
Africa	13.76%	1.30%	25%

Source: Commission for Africa[54]

The above table shows the uneven distribution of both health workers and burden of disease, where those countries who bear the highest proportion of disease have the lowest health coverage which is in fact attributed to health workers' shortage juxtaposed with the growing rate of population mainly in low-middle income countries in African regions which indeed are one of the main source of physicians.

A global crisis is afflicting the health workforce: its numbers are insufficient to deliver essential services, its distribution is unequal, and its working conditions are frequently subpar. Up to 10,000 people are compelled to rely on services offered by five or fewer health workers in a number of countries, including Senegal, Haiti, Niger, and Sierra Leone, according to the most recent data available. The number of health workers per 10,000 people in Finland, a high-income nation, is 269[55].

According to Frenk et al[56], throughout the last 10 years, there has been a notable increase in the annual number of medical graduates worldwide, nearly doubling. Higher income nations witnessed higher graduation rates than lower income nations, while private schools witnessed higher graduation rates than public ones. The global deficit in the health workforce has been partially mitigated by the rise of medical graduates; nonetheless, the shortfall remains significant, with approximately 15 million in 2020 and projected to rise to 10 million by 2030. But the increase in the number of graduates in medicine and nursing conceals the deteriorating state of the labor force distribution[57].

Despite this, there is no one unified guideline or norm for health professional density, making it challenging to set thresholds. This implies that there is no predetermined amount or combination of healthcare professionals that the health system needs in order to operate efficiently [58].

In order to achieve at least 80% skilled birth attendance, the World Health Organization (WHO) set a minimum threshold density of 23 doctors, nurses, and midwives per 10,000 people in 2006 as one of the indicators for the Millennium Development Goals[59]. However, the shortcomings of this barrier have become apparent as focus in global health policy shifts to the more ambitious Sustainable Development Goals, where the primary goal is universal health care. Therefore, there have been several attempts to identify the "optimal" threshold density of health professionals at which crucial health goals can be fulfilled across national borders [60].

In order to ensure social protection, the ILO proposed the "access deficit for health professionals" indicator in 2014 at a minimum threshold density of 34 physicians, nurses, and midwives per 10,000 inhabitants (later changed to 41 per 10,000 population)[61]. This has been questioned due to a lack of sufficient empirical link to health service coverage [62].

Additionally, to achieve less than 50 maternal fatalities per 100,000 live births, the Global Initiative to End Maternal fatalities by 2035 research found that 59 physicians, nurses, and midwives are needed for every 10,000 people[63]. However, this criterion may not be as well-liked under the present global health policy agenda because to the lack of a clear policy relationship with the larger ambition to achieve universal health coverage and the Sustainable Development Goals[64].

Until recently, France keep depleting patently physicians from Arab Maghreb countries putting their health sector in danger of deterioration, as shown in the table below:

Table (2): The ratio of physicians from Arab Maghreb

Specialty	The totality	Morocco	Tunisia	Algeria
Psychiatry	63.90%	9.30%	13.60%	41%
Anesthesiology	55.80%	10.20%	16.90%	28.60%
Radiology	63.60%	13.30%	17.70%	32.80%
Surgery	72%	8%	15.50%	24.30%
Ophthalmology	62.80%	10.80%	15.10%	36.90%
Gynecology-Obstetrics	49%	7%	15%	15.70%
General surgery	50.80%	5%	15.60%	21.50%

Source: CNOM[65]

It is clear that Algeria makes a high proportion of physicians working in France in comparison to other countries. Psychiatry ophthalmology and radiology are the most specialty that significantly affected by France recruitment polices. These policies will result in continuous hemorrhaging of this health resource which lead to the deterioration of the Algerian health system. Although the Algerian policy makers initiated a set of measures related to reversing brain drain to brain gain they did not succeed in preserving their health professionals. This may be attributed largely to marginalizing these workers from establishing a serious dialogue toward a unified vision in addition to that, the push factors need to addressed to overcome the rooted reasons of emigration.

2- Benefits in Source Countries:

Long-term professional networks, enhanced training and skills of migrant workers—which benefit the source country by increasing productivity upon return—and higher real wages for those who stay in their countries are some of the advantages of migration to source countries. Permanent migration does not yield these benefits. and diaspora remittances (66).

If there is a "brain drain" and migratory health workers wind up in low-skilled jobs or outside the health sector in their new country, these benefits would not be as envisioned (67). Research indicated that the idea of "brain gain" pertains to non-emigrants who attempted to obtain skills in order to become permanent residents but were not successful in doing so. It cannot significantly benefit the nation of origin and is just a limited gain. Literatures also indicate that immigration might serve as a "safety valve" by easing the strains that these people must deal with. Employment possibilities should be supplied by national governments (68).

Chapter III: The Impact of Physicians Emigration on the Economy of Source and Destination Countries:

The rapid mounting in proportion of medical brain drain leads to many economic outcomes in both countries, the situation is alarming and needs to be addressed more profoundly.

1- Losses in Source Countries:

Economically speaking, the that African Region pays US$65,997 for the education of one doctor from primary school through university; the nation loses around $1,854,677 in investment returns for each physician that leaves (69). Besides, the negative impacts on source countries

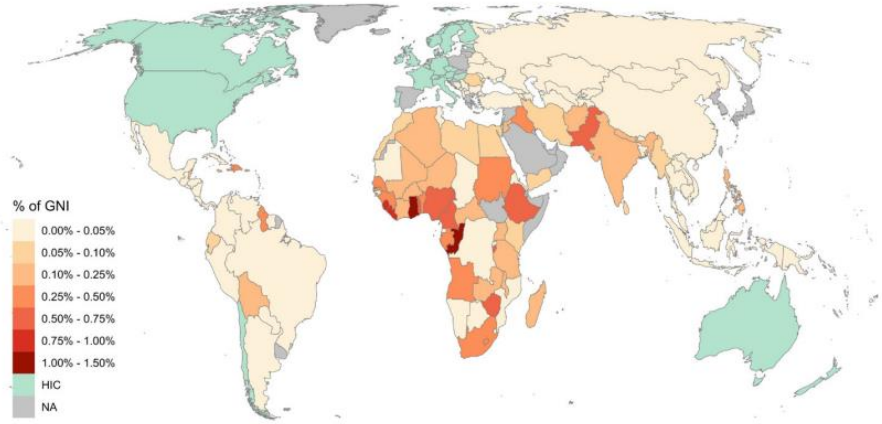
include losses in terms of training costs, loss of revenue from taxes, and increased mortality and morbidity among the population, which are exacerbated by shortages of physicians or their replacement by less qualified Physicians [(70)]. Physicians' emigration also reduces economic growth opportunities, raises the level of inequality and poverty in the country of origin [(71)].

Brock and Blake [(72)] identified four types of impacts: skilled workers typically contribute more to a country's tax receipts than they get in government expenditures. The departure of such professionals can result in a substantial decrease in revenue and hinder the implementation of more advanced taxing systems. It is approximated that the economic burden of the emigration of these highly skilled professionals from India to be 2.5 percent of India's fiscal receipts, or 0.5 percent of India's gross national income (GDI). The annual amount for each migrant aged twenty-five and older in the US is approximately $4,120. The precise fiscal loss incurred by a certain country is contingent upon the tax structure in the country of origin and its level of progressivity. Micronesia and Tonga, with their low and flat income tax rates, incur losses of around $500–$1,000 each migrant. In comparison, Ghana imposes higher and more progressive income tax rates, resulting in losses of around $5,500-$6,300 per migrant each year.

A Physician training in South Africa is expected to cost about $97,000. This works out to $42,000 for a nurse, meaning that the entire amount of money lost on investments in medical education can be calculated at almost 1 billion US$, or one-third of South Africa's official development aid from 1994 to 2000 [(73)].

When the losses are measured in terms of gross national income (GNI), the worst costs are accrued in the Congo, Sierra Leone, Ghana, and Liberia. As shown below:

Figure (2): Annual cost of physician emigration, expressed as a percentage of GNI.



Source: SALUJA, S. [74]

The above study estimated that low- and middle-income countries (LMICs) lose about sixteen billion dollars annually. In the model used in the study, the majority of this expenditure can be attributed to mortality rates among children under the age of five that are related with the shortage of physician. India, Nigeria, Pakistan and South Africa incur the largest total costs. When these costs are considered in terms of percentage of gross national income, the cost is greater in the WHO African Region and in low-income countries [75].

However, as Mejía et al.[76] argued, those who complain about the consequences of health workforce migration often present their arguments in economic terms, often with little understanding of the facts and figures they present. Likewise, proposals regarding compensatory payments by destination countries to countries of origin generally ignore the fact that it is very difficult to determine what factors should be taken into account when assessing the value of an emigrant physician, and determining who win and who lose.

As a result of emigration, the Kenyan government has lost an estimated 95 million US$ that was spent alone on physician training (education and universities); estimates indicate that these losses could be greater. Compound interest, unstated expenses for families, and health care bills are not included in this amount. Put differently,

migration causes a net outflow of capital from the nation and its health system even when remittances are taken into consideration(77).

However, from the standpoint of human rights, compensation that solely accounts for the expenses of training given in destination nations without taking into consideration additional losses in low-income nations can be viewed as ethically unacceptable(78). Calls for agreements formalizing the flow of monies in the form of remittances to family members in source countries are closely related to the concept of financial compensation. This is carried out in a fashion that allows for tracking of the amount and potential taxation to collect a portion of the revenue for development priorities. The entire field of fiscal recovery and remittance-based tax revenue generation is intricate.

2- Benefits in destination countries:

The advantages of physicians immigrants for destination countries like the UK are significant: immigrant physician or nurse can be hired at no cost right away, avoiding the need to train new health worker for five or six years at an estimated cost of £220,000 for physicians and £12,500 for nurses in order to fill staff shortage (79). Savings in this manner since 1998, the UK has spent £65 million on training physicians and £38 million on importing nurses from Ghana, all of which have negatively impacted the country's ability to continue or expand health care delivery for the benefit of the general public's well-being (80). Another study revealed that the benefits of brining physicians immigrants equals a saving of at least, $384m for Canada, $2.7bn for the United Kingdom, $621m for Australia, and $846m for the United States; $4.55bn in total (81).

Rutten (82) explored the economic impact of physicians immigrants, and the primary conclusion derived from the model he implemented was that recruiting foreign physicians and nurses in the United Kingdom results in greater overall welfare benefits compared to a general increase in the funding allocated to the National Health Service (NHS). Welfare benefits increase when wage protection is implemented. However, an empirical research demonstrated that immigrants appear to pay more in taxes than they do in social security, which supports the financial system and overall economic growth in industrialized nations, and that their effects on wages in the destination country are negative but marginal (83).

In term of wages, Cook[84] investigated the Impact of physicians immigration on local wages. The study's findings indicated that, in the short term, the influence of physician immigration on local salaries is modest yet favorable. Over time, wages adjust and the effect becomes unfavorable and statistically meaningful, despite the extent of the effect of a one percentage point rise in the proportion of immigrant physicians in a region is less than 0.2%. When comparing foreign-born international medical graduates to foreign-born physicians educated in the United States, the negative salary effects of immigration are generally greater for the former. The study also provided evidence that the adverse impacts of immigration are mitigated by the emigration of native physicians with the lowest salaries. In addition, physicians have a tendency to choose to practice in regions with greater earnings, and foreign-born physicians are more inclined than native physicians to work in urban areas rather than rural regions.

Conclusion:

To conclude, physicians' emigration has a long history and developed through time in the context of the global need for health security. Although it is not an easy task to assess the impact of physicians' emigration on source and host countries due to the limitations of data, developing countries incur the most of its detrimental effects in terms of health care provision to its citizens or the structural economic losses. While receiving countries benefited from immigration in terms of enhancing its health status and save more expenditures.

However, more studies are needed to collect data to estimate and evaluate the impact of this phenomenon with more precision and accuracy to assist policy makers and international agencies in engaging in a worldwide dialogue and enacting laws to overcome the crisis.

It takes some diversified strategies to achieve a balance between the interests of donor and destination countries to address the advantages and disadvantages of physician emigration. Policymakers should put more efforts in promoting more international collaborations, develop medical education and training programs, and execute sustainable workforce planning and retention strategies, to overcome the negative repercussion of medical brain drain. Through tackling the underlying factors that lead to physicians' emigration and advocating for fair allocation of healthcare resources, we can minimize the adverse effects

and optimize the advantages for the healthcare systems of both the recipient and donor countries.

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